A time span of active research: How further?

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KVI-CART, Groningen

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SYMPOSIUM on the Occasion of Angela Bracco and Adam Maj 60th Birthday

Kraków, Poland

Angela Bracco
Born 24 September 1955 (10 more days)

PhD in Physics in 1983 (awarded February 1984)
TRIUMF laboratory, University of British Colombia and University of Manitoba; Canada
Thesis supervisor: Willem T.H. Van Oers

"Levels in ^{147}Eu and the interacting boson-fermion model in ^{147}Eu, ^{151}Eu"
G. Lobianco, …, A. Bracco and N. Blasi *et al.*, JPG 7 (1981) 219

"Study of 2-nucleon wave-functions in ^{3}He"
A. Bracco, …, H. Postma, *et al.*, PRL 50 (1983) 1741

Much work done on few-body systems; 7 publications in total.
Technical developments performed on various systems.
SSD telescopes; BGO & CsI(Tl); later BaF_2 (HECTOR)and $LaBr_3$ (PARIS)

"Study of the breathing mode of ^{208}Pb through neutron decay"
A. Bracco, J.R. Beene *et al*., PRL 60 (1988) 2603

"The direct neutron decay of giant resonances in ^{208}Pb"
A. Bracco, NPA 482 (1988) c421

"Neutron decay from the giant-resonance region in ^{208}Pb"
A. Bracco, J.R. Beene *et al*., PRC 39 (1989) 725 (R)
⇒ ^{17}O scattering at 378 MeV (22.24 MeV/u) at 13°

"Decay of the isoscalar giant monopole resonance in ^{208}Pb"
S. Brandenburg *et al*., NPA 466 (1987) 29

"Evidence for a (semi) direct component in the decay of the isoscalar giant monopole in ^{208}Pb"
S. Brandenburg *et al*., PRC 39 (1989) 2448

Final-state spectra in ^{207}Pb obtained from neutron decay of

(a) continuum underlying ISGMR in ^{208}Pb and

(b and c) ISGMR proper.

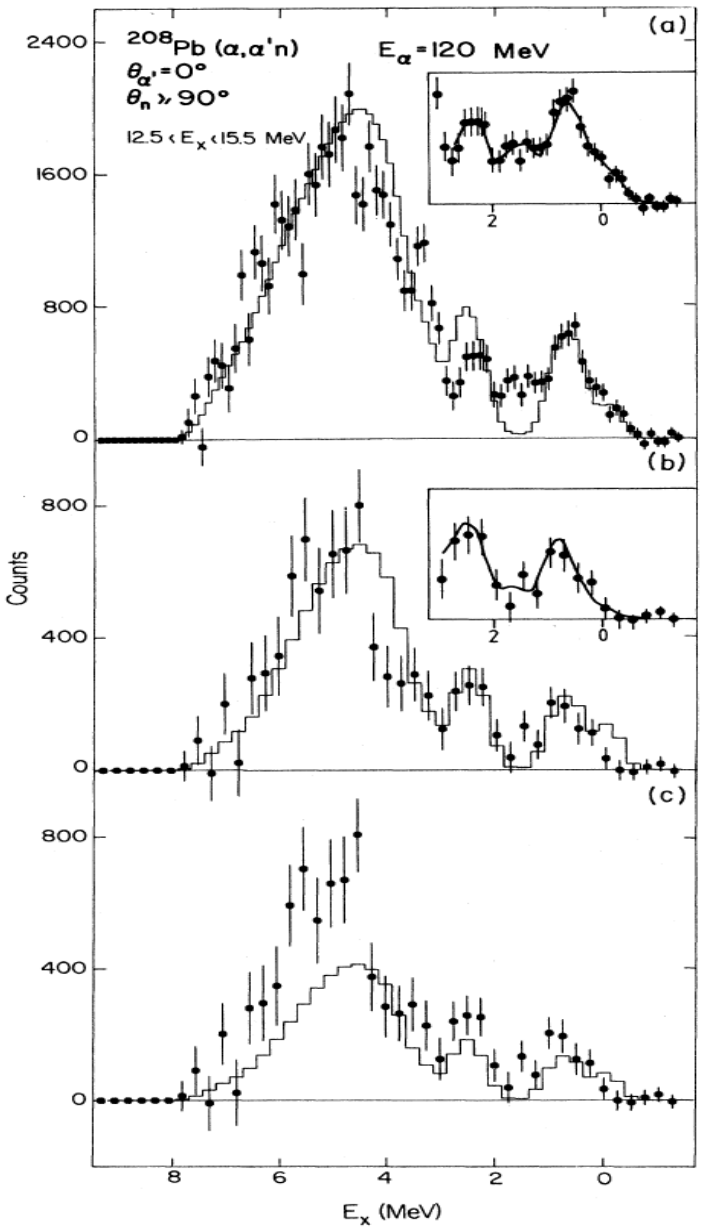
(b) Fit with 100% statistical

(c) Fit with 60% statistical

l_j	E_x (MeV)	$\Gamma_j^{\uparrow}$ (keV), expt.	$\Gamma_j^{\uparrow}$ (keV), theory
$p_{1/2}$	0	140 ± 35	5
$i_{13/2}$	1.630		6
$f_{5/2}$	0.570	70 ± 15	92
$p_{3/2}$	0.890	50 ± 10	8
$f_{7/2}$	2.340	165 ± 40	174

Γ_{tot} = 2.9 MeV; $\Gamma^{\uparrow}$ = 425 keV

≈ 15% Direct decay



Study of hot IVGDR, i.e. IVGDR built on highly excited states (high temperature)

"Limits of collective motion in hot nuclear-matter"
J.J. Gaardhøje *et al*., PRL 59 (1987) 1409

"Collisions and mean field fluctuations in the relaxation of giant-resonances in hot nuclei"
P.F. Bortignon, R.A. Broglia, A. Bracco *et al*., NPA 495 (1989) c155

"Saturation of the width of the giant-dipole resonance at high-temperature"
A. Bracco,…, J. Bacelar and H. Hofmann, PRL 62 (1989) 2080
Breakthrough in study of hot IVGDR.

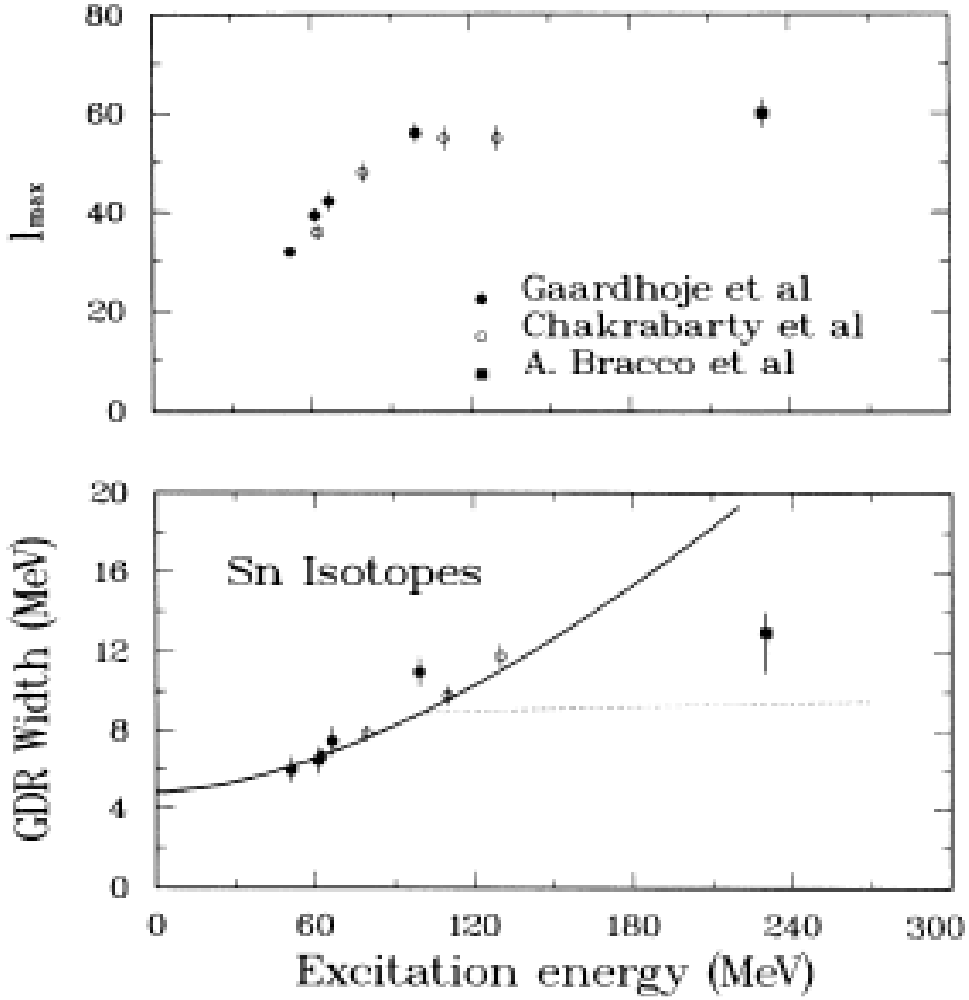
Breakthrough in study of hot IVGDR.

Very highly cited paper.

Hot IVGDR is a theme which was pursued by many groups.

Many publications also in collaboration with Adam.

Nuclear Structure studies Using gamma arrays: EUROBALL, RISING AGATA.



“Pygmy dipole resonance in ^{124}Sn populated by inelastic scattering of ^{17}O”
L. Pellegri, A. Bracco *et al*., PLB 738 (2014) 519

“Isospin character of low-lying pygmy dipole states in ^{208}Pb via inelastic scattering of ^{17}O ions”
F.C.L. Crespi, A. Bracco *et al*., PRL 113 (2014) 012501

“Splitting of the pygmy dipole resonance in ^{138}Ba and ^{140}Ce observed in the (α,α′γ) reaction”
J. Endres *et al*., PRC 80 (2009) 034302

“Isospin character of the pygmy dipole resonance in ^{124}Sn”
J. Endres *et al*., PRL 105 (2010) 212503

“Structure of the pygmy dipole resonance in ^{124}Sn”
J. Endres *et al*., PRC 85 (2012) 064331

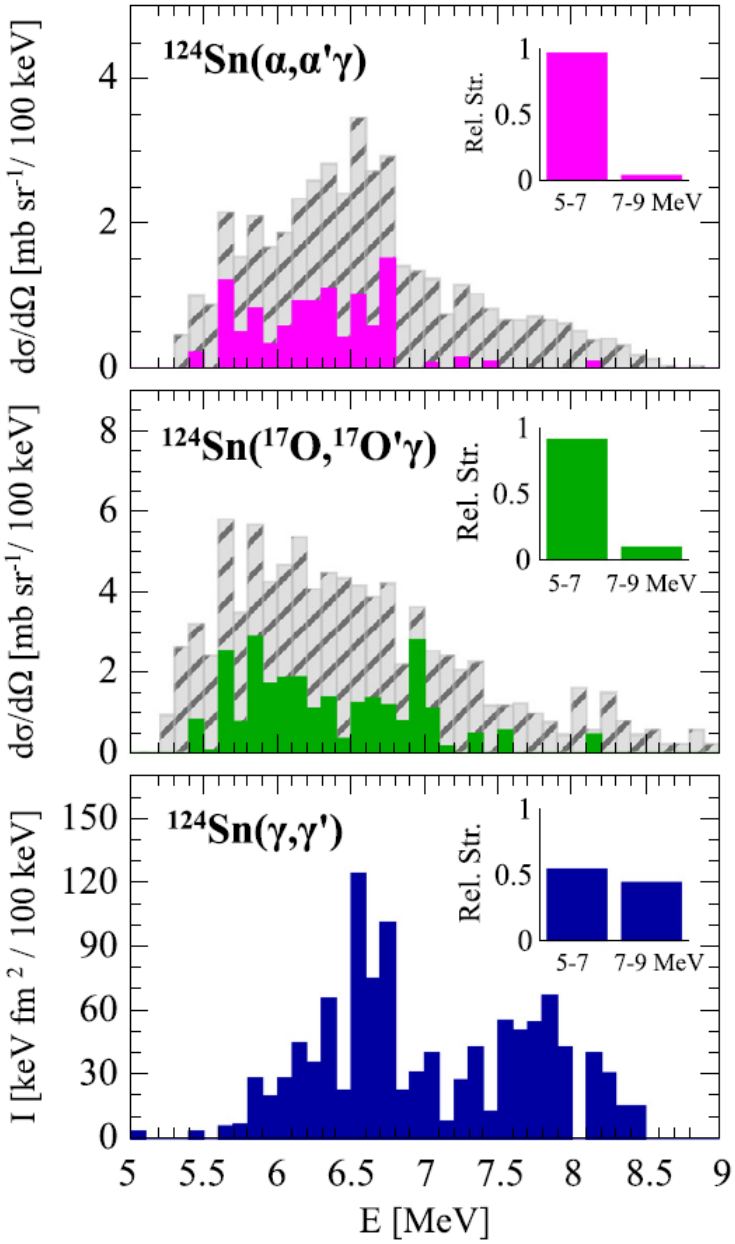
The grey histogram corresponds to the total unresolved strength.

Top panel: α scattering

Center panel: ^{17}O scattering

Bottom panel: photon scattering

To conclude this part:
Angela's scientific achievements are outstanding. We have not collaborated in the past but competed in a good scientific and collegial spirit. I will come back to this at the end of my talk.



Angela is active in education, supervision of students at all levels, has had many management positions and has served on many committees both national and international.

In the following, I would like to mention some and highlight a few.

- **Chair of the Nuclear Physics Board (CSN3) of INFN**
- **Member of the Governing Board of NuPNET**
- **Chair of NuPECC since January 2012**
- **Member of the Executive Board of the European Physical Society (from 2014)**
- **Member and/or Chair of many scientific advisory committees, evaluation panels, expert panels; too many to name them all.**


NuPNET Kick-off Meeting at CNRS/IN2P3
27 March 2008

Third session of NuPNET Open Days (12-13 May 2009)

Università degli Studi di Milano

"Sala Napoleonica"

NuPNET 2nd Governing Council Meeting at NKTH Budapest

14-15 January 2010

NuPECC meeting in Kraków in October 2013 was the occasion for celebration of 25th Anniversary of NuPECC. All former Chairs were invited.

Of the founding fathers, unfortunately:
Claude Détraz could not attend and
Paul Kienle had passed away on 29 January 2013

All other Chairs attended and received an Appreciation Award from Angela:

Sydney Galès
Juha Äystö
Muhsin N. Harakeh
Brian Fulton
Günther Rosner

NuPECC Meeting 11-12 October 2013

Institute of Nuclear Physics Polish Academy of Sciences, Kraków

Enrico Fermi Varenna Summer School

Zakopane Conference on Nuclear Physics

30 August - 4 September 2010

Chair: Adam Maj

Zakopane Conference on Nuclear Physics

At the British Ambassador residence in Bucharest
ELI-NP ISAB meeting 18-20 February 2015

Nishina Center Advisory Committee

Meeting 1-3 July 2014

RIBF Tour

How Further:

Angela will remain active in research and all other activities.

She has started an experimental programme at Cyclotron Centre Bronowice at IFJ-PAN together with Adam.

She has ongoing experimental programmes at LNL and GANIL/SPIRAL2.

Last but not least, we (Angela, Adam, I and many other colleagues will finally get to collaborate on an approved research programme to investigate PDR at RCNP, Osaka:

E441 5.0 days (6Li,6Li'γ)

E450 25.0 days (*p*,*p*'γ) and (α,α'γ) for PDR

E454 6.0 days (*p*,*p*'γ) at 300 MeV and (α,α'γ) for PDR

In total 36.0 days

NuPECC meeting
Edinburgh, Scotland

10-11 October 2014

The Higgs Centre for Theoretical Physics James Clark Maxwell Building

Let us wish Angela and Adam many successful years to come with good health and energy to keep doing the excellent work.

Thank you for your attention


RIKEN
NiSHiNA
CENTER